

We claim:

1. An isolated nucleic acid consisting of a sequence that encodes a polypeptide with  
5 the amino acid sequence of SEQ ID NO:2.

2. The isolated nucleic acid of claim 1 wherein the nucleic acid consists of the  
sequence of SEQ ID NO:1.

10 3. A recombinant expression vector comprising the isolated nucleic acid sequence of  
claim 1 operatively linked to a promoter.

4. A host cell transfected with the recombinant expression vector of claim 3.

15 5. An isolated laminin  $\alpha 5$  polypeptide, consisting of the amino acid sequence of  
SEQ ID NO:2.

6. Isolated laminin 10.

20 7. The isolated laminin 10 of claim 6, wherein the isolated laminin 10 is  
recombinant laminin 10.

8. The isolated recombinant laminin 10 of claim 7 comprising:

25 a first chain encoded by a polynucleotide that hybridizes under high stringency  
conditions to a coding region of one or more sequence selected from the group consisting  
of SEQ ID NO:1 and SEQ ID NO:3;

a second chain encoded by a polynucleotide that hybridizes under high stringency  
conditions to a coding region of one or more sequence selected from the group consisting  
of SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, and SEQ ID NO:11; and

30 a third chain encoded by a polynucleotide that hybridizes under high stringency

conditions to a coding region of one or more sequence selected from the group consisting of SEQ ID NO: 13, SEQ ID NO:15, SEQ ID NO:17, and SEQ ID NO:19; wherein the first, second, and third chains are assembled into recombinant laminin 10.

9. The isolated recombinant laminin 10 of claim 7 comprising:

a first chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:2, and SEQ ID NO:4;

a second chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, and SEQ ID NO:12; and

a third chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, and SEQ ID NO:20;

wherein the first, second, and third chains are assembled into recombinant laminin 10.

10. The isolated recombinant laminin 10 of claim 7 comprising a first, second, and third polypeptide chain, wherein the first, second, and third polypeptide chains each comprise a general structure selected from the group consisting of: (1) R1-R2-R3; (2) R1-R2-R3(e); (3) R3; (4) R3(e); (5) R1-R3; (6) R1-R3(e); (7) R2-R3; and (8) R2-R3(e)

wherein R1 is an amino terminal methionine; R2 is a signal sequence that is capable of directing secretion of the polypeptide, wherein the signal sequence may be the natural signal sequence for the particular laminin chain, that of another secreted protein, or it may be an artificial sequence; R3 is a secreted  $\alpha$ 5 laminin chain for the first polypeptide chain, a secreted  $\beta$ 1 laminin chain for the second polypeptide chain, and a secreted  $\gamma$ 1 laminin chain for the third polypeptide chain; and R3(e) is identical to R3, but further comprises an epitope tag.

11. Recombinant laminin 10-expressing host cells.

12. The recombinant laminin 10-expressing host cells of claim 11, wherein the recombinant laminin 10 comprises:

a first chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3;

a second chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more sequence selected from the group consisting of SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, and SEQ ID NO:11; and

a third chain encoded by a polynucleotide that hybridizes under high stringency conditions to a coding region of one or more sequence selected from the group consisting of SEQ ID NO: 13, SEQ ID NO:15, SEQ ID NO:17, and SEQ ID NO:19; wherein the first, second, and third chains are assembled into recombinant laminin 10.

13. The isolated recombinant laminin 10-expressing host cells of claim 11, wherein the recombinant laminin 10 comprises:

a first chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:2, and SEQ ID NO:4;

a second chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, and SEQ ID NO:12; and

a third chain comprising a polypeptide at least 70% identical to one or more polypeptide sequences selected from the group consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, and SEQ ID NO:20; wherein the first, second, and third chains are assembled into recombinant laminin 10.

14. The host cells of claim 11, wherein the host cell is a mammalian cell.

15. The host cells of claim 13, wherein at least one of the first, second, or third chains is expressed as a fusion protein with an epitope tag.

16. A method of isolating recombinant laminin 10, comprising:

- a. providing the host cells of claim 13;
- b. growing the cells in cell culture medium under conditions to stimulate expression of the recombinant laminin 10 chains;
- c. passing the cell culture medium through an affinity chromatography column, wherein the column contains a compound that binds to the recombinant laminin 10;
- d. washing the affinity column to remove unbound materials; and
- e. eluting the bound recombinant laminin 10 from the column.

17. Isolated recombinant laminin 10 isolated according to the method of claim 16.

18. A method to improve the biocompatibility of a medical device or graft, comprising contacting the medical device or graft with an amount effective of isolated laminin 10 to improve the biocompatibility of the medical device or graft.

19. An improved medical device or graft, wherein the improvement consists of providing a medical device or graft with an amount effective of isolated laminin 10 to improve the biocompatibility of the medical device or graft.

20. A method to promote cell adhesion and/or cell migration to a surface, comprising contacting cells with an amount effective of isolated laminin 10 to promote cell adhesion and/or cell migration to the surface.

21. An improved cell growth substrate, wherein the improvement consists of providing a cell growth substrate that has been coated with an amount effective of laminin 10 to promote cell attachment to the cell growth substrate.

22. A method to accelerate healing of a vascular tissue injury in a subject, comprising contacting the site of the vascular tissue injury of the subject with an amount effective of laminin 10 to promote re-endothelialization at the vascular tissue injury site.

- 5 23. A pharmaceutical composition comprising:
- a) the isolated laminin 10 of claim 6; and
  - b) a pharmaceutically acceptable carrier.